

1. Find $f(-3)$ for each function below.

a) $f(x) = -2x + 3$

$$-2(-3) + 3 = 6 + 3 = 9 \quad \boxed{f(-3) = 9}$$

b) $f(x) = |x^2 - 12|$

$$|(-3)^2 - 12| = |9 - 12| = |-3| = 3 \quad \boxed{f(-3) = 3}$$

c) $f(x) = \sqrt[3]{9x} + 2$

$$\sqrt[3]{9(-3)} + 2 = \sqrt[3]{-27} + 2 = -3 + 2 = -1 \quad \boxed{f(-3) = -1}$$

d) $f(x) = \frac{1}{2}x + 2$

$$\frac{1}{2}(-3) + 2 = -\frac{3}{2} + 2 = \frac{1}{2} \quad \boxed{f(-3) = \frac{1}{2}}$$

2. If $f(x) = 2x - 3$ for each function below calculate the possible values for x .

a) $f(x) = 13$

$$\begin{array}{r} 12 \\ +3 \end{array} = \begin{array}{r} 2x \\ +3 \end{array}$$

$$15 = 2x$$

$$\boxed{x = 7.5}$$

b) $f(x) = -3$

$$\begin{array}{r} -3 \\ +3 \end{array} = \begin{array}{r} 2x \\ +3 \end{array}$$

$$0 = 2x$$

$$\frac{0}{2} = \frac{2x}{2}$$

$$\boxed{0 = x}$$

3. Copy and complete these generic rectangles on your paper. Then write the area of each rectangle as a product of the length and width and as a sum of the parts.

a.

6	$78x$	-126
	$13x$	-21

$$6(13x - 21) = 78x - 126$$

P

c.

3x	$3x^2$	$12x$
-2	$-2x$	-8
	x	$+4$

$$(3x - 2)(x + 4) = 3x^2 + 10x - 8$$

P

S

b.

x	x^2	$3x$
-5	$-5x$	-15
	x	$+3$

$$P: (x - 5)(x + 3)$$

$$S: x^2 - 2x - 15$$

d.

4	$16x^2$	$-24x$	4
	x^2	$-6x$	$+1$

$$4(x^2 - 6x + 1) = 16x^2 - 24x + 4$$

P

S

4. Give the following information write the equation of the line.

a) Goes through the points (1,3) and (4,7).

$$\begin{array}{c|c} x & y \\ \hline 1 & 3 \\ 4 & 7 \end{array} \quad \begin{array}{l} -1 \leftarrow 0 \\ +3 \leftarrow 4 \end{array} \quad \begin{array}{l} -1\frac{1}{3} \\ +4 \end{array} \quad \frac{\Delta y}{\Delta x} = \frac{4}{3} \quad y = \frac{4}{3}x + 1\frac{2}{3}$$

i. Name another two points on this line.

(7, 11) $\frac{1}{3}$ (-2, -1)

b) Find the equation of the line based on the table.

x	3	-2	5	12
y	4	-11	10	31

the dotted boxes I added in.

$$\begin{array}{c|c} x & -2 \quad 3 \quad 5 \quad 12 \\ \hline y & -11 \quad 4 \quad 10 \quad 31 \end{array}$$

$\begin{array}{l} -3 \quad +2 \quad +7 \\ -9 \quad +6 \quad +21 \end{array}$

for every ± 1 change in x, the y changes ± 3

$$\frac{\Delta y}{\Delta x} = \frac{6}{2} = 3$$

$$y = 3x - 5$$

c) Has a slope of $-\frac{2}{5}$ and goes through the point (-1,15)

$$m = -\frac{2}{5} \quad \text{pt } (-1, 15)$$

$$y = mx + b$$

$$15 = -\frac{2}{5}(-1) + b$$

$$15 = \frac{2}{5} + b$$

$$-\frac{2}{5} \quad -\frac{2}{5}$$

$$14\frac{3}{5} = b$$

$$y = -\frac{2}{5}x + 14\frac{3}{5}$$

5. Solve each equation.

a) $2(x+1) + 3 = 3(x-1)$

b) $(x+2)(x+3) = (x+1)(x+5)$

c) $|3x+4| = -1$

d) $|5x+1| = 12$

a) $2(x+1) + 3 = 3(x-1)$

$2x + 2 + 3 = 3x - 3$

$2x + 5 = 3x - 3$

$\underline{-2x} \quad \underline{-5} \quad \underline{-3x} \quad \underline{-5}$

$-x = -8$

$\boxed{x = 8}$

b) $(x+2)(x+3) = (x+1)(x+5)$

$x^2 + 5x + 6 = x^2 + 6x + 5$
 $\underline{-x^2} \quad \underline{-5x} \quad \underline{-6} \quad \underline{-x^2} \quad \underline{-5x} \quad \underline{-6}$

$\boxed{1 = x}$

1	x	5
x	x ²	5x
	x	5

6. Simplify

a) $(3x^2y)(5x) \rightarrow \boxed{15x^3y}$

b) $(x^2y^3)(x^{-2}y^{-2}) \rightarrow x^0y^1 = \boxed{y}$

c) $(2x^{-1})^3 \rightarrow 8x^{-3} = \boxed{\frac{8}{x^3}}$

d) $(x^2)(x^2y^3) \rightarrow \boxed{x^4y^3}$

e) $\frac{x^3y^4}{x^2y^3} = \boxed{xy}$

f) $(2x^2)(-3x^4) \rightarrow \boxed{-6x^6}$

g) $(2x)^3 \rightarrow 2x \cdot 2x \cdot 2x = \boxed{8x^3}$

h) $(5x^3)(-3x^{-2}) \rightarrow \boxed{-15x^1}$

i) $(4p^2q)^3 \rightarrow 4p^2q \cdot 4p^2q \cdot 4p^2q = \boxed{64p^6q^3}$

j) $\frac{3m^7}{m^{-1}} = 3m^7 \cdot m^1 = \boxed{3m^8}$

k) $\frac{3m^7}{15x^6y^8}$

$\rightarrow \frac{6x^4y^4}{15x^6y^8} = \frac{6}{15} \cdot \frac{x^4}{x^6} \cdot \frac{y^4}{y^8}$

$= \frac{2}{5} \cdot \frac{1}{x^2} \cdot \frac{y^3}{1} = \frac{2y^3}{5x^2}$

7. Solve each of the following equations for the indicated variable. Record your work.

a) Solve for x : $y = -2x + 5$

$$\frac{y-5}{-2} = x \quad \text{or} \quad \frac{-y}{2} + \frac{5}{2} = x$$

b) Solve for p : $m = 7 - 3(p - m)$

$$m = 7 - 3p + 3m \Rightarrow -2m = 7 - 3p \Rightarrow \frac{-2m - 7}{-3} = p$$

c) Solve for y : $x^2 + 4y = (x + 6)(x - 2) \Rightarrow x^2 + 4y = x^2 + 4x - 12 \Rightarrow 4y = 4x - 12$

$$\Rightarrow y = x - 3$$

d) Solve for q : $4(q - 8) = 7q + 5$

$$4q - 32 = 7q + 5$$

$$-4q - 5 \quad -4q - 5$$

$$-37 = 3q$$

$$q = -12\frac{1}{3}$$

8. Copy each of the generic rectangles below and fill in the missing dimensions and areas. Then write the entire area as a product and as a sum.

a.

y	xy	$3y$
	x	3

$$y(x+3) = xy + 3y$$

c.

x	x^2	$2x$
3	$3x$	6
	x	2

$$(x+3)(x+2) = x^2 + 5x + 6$$

b.

x	$2x^2$	$-3xy$	$5x$
-2	$-4x$	$6y$	-10
	$-2x$	$-3y$	5

$$P: (x-2)(2x-3y+5)$$

$$S: 2x^2 + x - 3xy + 6y - 10$$

d.

x	x^2	$5x$
12	$12x$	60
	x	5

$$(x+12)(x+5)$$

$$x^2 + 17x + 60$$

9. Use a generic rectangle to multiply the following expressions. Write each solution both as a sum and as a product. Homework Help

a. $(2x + 5)(x + 6) = x^2 + 17x + 30$

b. $(m - 3)(3m + 5) = 3m^2 - 4m - 15$

c. $(12x + 1)(x^2 - 5) = 12x^3 + x^2 - 60x - 5$

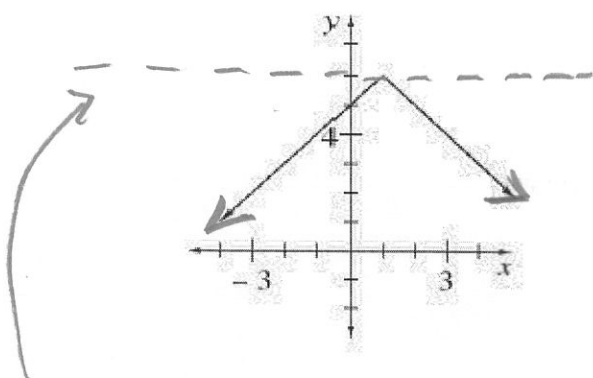
d. $(3 - 5y)(2 + y) = 6 - 7y - 5y^2$

Ex

5	$5x$	30
$2x$	$2x^2$	$12x$
	x	6

$$x^2 + 17x + 30$$

10. Given the following graphs answer the associated questions.



i. Is the following a Function? Y or N

ii. Determine the Domain:

D: All Real Numbers

iii. Determine the Range:

R: $y \leq 6$

notice my graph never
goes above 6; But
continues down forever.